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NOTES ON THE AMERICAN OCCURRENCE OF CREPIS BIENNIS.

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THE large genus *Crepis* is represented in the eastern United States by certain species of the Old World. These are weedy plants with somewhat the aspect of Hieraciums and are found introduced on roadsides, in fields, and about waste places. Of various species of the genus collected in this country from time to time all but a few have proved to be merely waifs. There has been a concensus of opinion, however, that four species have become sufficiently well established here to be recognized as elements of our flora. With the exception of *Crepis pulchra*, known only very locally from Virginia, there are commonly accredited to our region: *Crepis tectorum*, well characterized by involute cauline leaves; *C. capillaris* (*C. virens* of the older manuals) and *C. biennis*, both with plane stem-leaves, the former with small heads of flowers and 10-ribbed achenes, the latter with rather large heads and 13-ribbed achenes.

In the Philadelphia area these plants are to be considered as rather rare introductions, or at least only locally frequent. The greater part of our material is from ballast ground, collected many years ago, but recently scattered specimens have been coming in to the Herbarium of the Philadelphia Botanical Club from roadsides and cultivated ground — frequently grass-lands or newly-seeded lawns. In the absence of any personal experience in the field with the genus these specimens had never aroused sufficient interest to cause them to be more than very casually examined. In the early autumn of 1915 at

Toms River, New Jersey, an acquaintance with a conspicuous roadside weed belonging to this genus supplied the requisite interest to make a more careful study of these plants.

In critically examining at the Academy of Natural Sciences the American material of these introduced species of *Crepis*, a point of some interest was brought to light. It was seen that of the three species credited to our area the greater number of specimens by far represented *C. capillacea*; a lesser number, *C. tectorum*; but none, *C. biennis*! It was somewhat disconcerting to have found no *C. biennis*. The material from this country bearing the name "*Crepis biennis*" had indubitably fallen into *C. tectorum*. From descriptions and from European material in the Academy Herbarium *C. biennis* had been found to be a robust, more or less rough-hairy plant with large heads of flowers (involucre about 1 cm. tall, with its bracts pubescent on the inner faces), and achenes about 4–5 mm. long, olivaceous, 13-ribbed, not beaked — a well marked plant, very different superficially, as well as in its more obscure and technical characters, from the other Old World species accredited to America.

A unanimity of opinion was seen in our American manuals in crediting the plant with a more or less extended range: in *Gray's New Manual*, "N. E. to Pa. and Mich." and in the new edition of the *Illustrated Flora*, "Vermont to Pennsylvania, Michigan, and in ballast about the seaports." An interest naturally centered in the Pennsylvania occurrence.

In Taylor's *Flora of the Vicinity of New York* it was found with some surprise to be "more common in Pa. than elsewhere."¹ Reference to Keller and Brown's *Flora of Philadelphia and Vicinity* showed their knowledge of the plant to be based entirely upon two records in Porter's *Flora of Pennsylvania* — one for Easton, in Northampton County and another for Chester County.² On being verified in Porter's *Flora* these were found to constitute the entirety of his records for the state.³

The Porter Herbarium had then only recently arrived at the Academy, and although in rather a disorganized condition for locating a small series like *Crepis*, the fact of two definite records in his *Flora* was incentive enough to search diligently for the basis of these records.

¹ Taylor, Fl. Vic. N. Y. 645 (1915).

² Keller & Brown, Fl. Phila. & Vic. 311 (1905).

³ Porter, Fl. Pa. 305 (1903).

With the passing of Professor Porter's guardianship, his herbarium, with its loose plants and labels, in many groups had suffered much from careless handling, but fortunately the thin covers of *Crepis* in the Pennsylvania series had been quite undisturbed. In the cover labelled "*Crepis biennis* L." were two plants: one ticketed in pencil "Coll. Grounds, '69," presumably those of Lafayette College and thus the basis of the Easton record for Northampton County; the other from Wm. M. Canby with the data, "Introduced, Chester Co., Pa. 1863." The "Coll. Grounds" specimen though named "*Crepis biennis*" in Porter's hand (the rest of the label, however, doubtfully his) is a plant quite different from that species. It is low, scapose, with a single, rather large head, superficially somewhat resembling a dandelion and apparently referable to *Leontodon hispidus*. The Canby specimen had been named originally "*Apargia autumnalis* L." but Porter, in the process of doubtless numerous examinations of this strange plant, had crossed through Canby's identification, transferred it to *Leontodon*, affixed a large "?", affirmed a "No!", written "*Crepis*" in ink and penciled "*biennis?*" and then finally inked in "*biennis* L." The specimen shows a branch of evidently a robust plant, rough-pubescent, and with plane stem-leaves. Unfortunately it is only in bud and insects had wrought havoc with the immature achenes, but from the large size of the buds and the pubescent character of the inner faces of the involucrel bracts it seems clear that this is indeed authentic *Crepis biennis*.

Further search in Philadelphia, at the College of Pharmacy and the University of Pennsylvania, produced no other material — except a fine specimen of *Sonchus arvensis* masking under the name of "*Crepis biennis*."

It had become quite evident by this time that *Crepis biennis* was far from being a plant familiar to Philadelphia botanists. Taylor's assertion of its greater frequency in Pennsylvania than elsewhere thus naturally led to an inquiry concerning the basis of this statement. Mr. Taylor kindly wrote me that his data consisted of apparently only the Porter records. With a deficiency of material at the New York Botanical Garden and two definite records from Pennsylvania his statement was readily verified — but not very happily phrased, it was felt, for information on the supposed occurrence of the species.

With the Pennsylvania records for the range of the species apparently satisfactorily reviewed, a brief search indicated that the New

England occurrence was probably based upon the notation of "Vermont, Pringle," in the *Synoptical Flora*¹ (amplified in the recent *Flora of Vermont* to the definite station, Charlotte)² and "Mass." in Watson and Coulter's Edition of Gray's *Manual*.³ Michigan appeared to originate in the new Gray's *Manual*. The specimen bases of these records all probably being still extant at the Gray Herbarium, Professor Fernald's interest was evoked, but pleading an unfamiliarity with the group, on being pressed for critical opinions on the identities of these plants, he enabled me to borrow the material — and to draw my own conclusions.

The bases of the records for Vermont, Massachusetts, and Michigan happily were all found preserved in the Gray Herbarium. The first is labelled: "Hieracium? Charlotte, Vt. (a casual) June 7th, 1875. C. G. Pringle," and the sheet marked twice with Gray's identification, "*Crepis biennis*," and a small "Syn. Fl. N. Amer." ticket attached. There are three good, essentially complete, specimens crowded upon the sheet. It is at once evident that this is not a homogeneous series representing a single species. One of the plants, with rather few, notably large heads, is recognizable as characteristic *C. biennis*. The remaining two, although superficially somewhat similar to *C. biennis*, show inflorescences of more numerous, appreciably smaller heads, and, except for the rough pubescence on stems and leaves, might readily be taken offhand for *C. capillacea*. On more critical examination they are found to have the inner faces of the involucre bracts glabrous, the achenes 10-ribbed, and about 3–3.5 mm. long — which conclusively shows that these plants cannot be *C. biennis*. One of them has pinnatifid leaves, similar to those of *C. biennis*, but the other has entire or remotely toothed leaves. There is also a decided difference in pubescence, especially on the inflorescence. They are both apparently referable, however, to *C. Nicaeensis* Balb. — the plant with the uncut foliage probably representing the form called β . *integrifolia* Lamt. in Rouy's treatment.⁴ The Massachusetts record is based upon two specimens with the label, in the hand of Sereno Watson, reading: "Crepis biennis, L. Wianno, Mass., sandy soil, near a dwelling. Miss L. M. Hill — June 1887." These appear to have the

¹ Gray, Syn. Fl. i. pt. ii. 430 (1884).

² Flora of Vermont. Vt. Agr. Exp. Sta. Bull. 187. 253 (1915).

³ Gray, Man. ed. 6. 300 (1890).

⁴ Rouy, Fl. Fr. ix. 227 (1905).

technical characters of *C. Nicaeensis*. They certainly do not represent *C. biennis*. The Michigan basis rests upon a sheet of two specimens, labelled: "Herbarium, Agricultural College, Mich. *Crepis biennis* L. In meadow on the College farm seeded with orchard grass seed imported from France. Coll. C. F. Wheeler, 15-VI-97." These again apparently represent *C. Nicaeensis*.¹

The material from the Missouri Botanical Garden, loaned me through the kindness of Dr. Greenman, showed no specimens of the desired species; but that from the National Herbarium, generously sent me by Mr. Standley for examination, produced a specimen from a new locality. This is labelled as collected at Asheville, North Carolina in 1888 by Gerald McCarthy. The specimen is a nearly complete plant in full flower showing the characteristic large heads of the species. As an indication of the size and general appearance of the expanded heads it is interesting to note that the original label reads: "*Cynthia virginica*" — which, however, has been crossed out and "*Crepis biennis*" written above in pencil.

In the general search for records of a definite occurrence of *Crepis biennis* it was noted that in Piper and Beattie's *Flora of the Northwest Coast* this species is reported from Vancouver Island on authority of Macoun.² A specimen collected by John Macoun and so named has been seen from Vancouver Island in the United States National Herbarium. Similar material, collected at a later date and then named *Crepis virens* by Macoun, is contained in the Herbarium of the Missouri Botanical Garden. Superficially, in habit, leaf-shape and generally hispid character, these plants suggest in some measure a reduced *Crepis biennis*, but the technical characters of glabrous inner faces of the involucre bracts and generally 10-ribbed achenes, coupled with the smaller size of the heads and of the achenes, show that they represent further American material of what appears to be *C. Nicaeensis*.

It is quite possible of course that continued search in the herbariums of the country might reveal a few more specimens of authentic *C. biennis*, but when the large collections already examined were able to

¹ It is pertinent to note that Rouy in the *Flore de France* indicates that the species is introduced with lucernes throughout Central Europe, Great Britain, Denmark and southern Sweden. One cannot but speculate whether *C. Nicaeensis* has not arrived in this country in a similar way and is to be classed with the various other European species that, as waifs, are picked up usually in clover-, alfalfa-, or grain-fields, or grass-lands.

² Piper & Beattie, *Fl. Nw. Coast*. 359 (1915).

show only three meager specimens, it seems very unlikely that sufficient material could be found to warrant the belief that this is a species worthy of an unchallenged place in all our manuals. It must not be forgotten, moreover, that these three specimens all represent distinctly ancient collections and that detailed information on their occurrence at these stations is quite lacking, except in the case of Pringle's collection. From his reference to the species at Charlotte as a casual and the fact of his collection consisting of three different forms, it is no great stretch of the imagination to visualize a weedy field planted with imported seed and containing scattered plants of *Crepis* and doubtless various other foreign species. It surely would have been difficult, except in some such habitat, to pick up three such unusual forms in one collection. Every collector knows the value to be attached to the occurrence of introductions of this type. It is equally well known how frequently an unusual introduction occurs as a single plant or a small colony and how familiar the circumstance is of its failure to reappear the following year. At times, of course, the collector is himself the cause of this but more often it is only the regular course of a strange plant failing to establish itself. Whether this species actually occurs at any of these localities at the present day is a matter open to very considerable doubt. In all probability it is not of a vigorous and weedy character and has long since died out at all three stations.

It seems scarcely necessary to suggest that the conclusion to be drawn from these notes is that much new evidence is needed on the presence of *Crepis biennis* on this continent to maintain it satisfactorily as an element of our flora. Until conclusive information is obtained of its actual establishment with us, it seems only just that it should be classed with the various other species of the genus (and is *C. tectorum* above suspicion?) that appear from time to time, chiefly in cultivated fields, and disappear within a year or two. There is no question of the interest attaching to strange and curious weeds that are found on lawns or among alfalfa, grain or other crops, but it is urgently desirable that these waifs be not confused with introductions that really have become naturalized.

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